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PROCEDURE INSTRUCTION LETTER NO. I-06-V-09

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Coal Mine Safety and Health

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Director of Technical Support

SUBJECT: Procedures for Approval of Alternative Seals

Scope
This Procedure Instruction Letter (PIL) applies to all Coal Mine Safety and Health enforcement personnel.

Purpose
This purpose of this PIL is to establish uniform procedures for application of Mine Safety and Health Administration (MSHA) regulations related to review and approval of ventilation plans which include alternative seals constructed in underground coal mines after July 19, 2006.

Procedure Instruction
For alternative seals, PIB P06-16 requires:

- Engineered designs to reliably withstand at least 50 pounds per square inch, gauge (psig) overpressure in the conditions in which the seal is to be installed;
- Designs to be certified by a Professional Engineer (PE) who is knowledgeable in structural engineering, or to be verified based on actual testing;
- Seal construction, installation and materials to be certified by senior mine management (mine manager, mine superintendent, or other equivalent mine official).

This requires MSHA District Managers to specifically approve all alternative seals that will be installed in a mine. This approval may be issued and apply for the construction of seals where the geologic, geotechnical, mining and opening size conditions at the seal locations are similar. Separate seal designs are required for each seal location where different geologic, geotechnical, or mining conditions will exist. Additionally, whenever a seal design is submitted for a set of geologic, geotechnical, and mining conditions in a mine, the ventilation plan must indicate how the operator will determine whether the seal design, or which seal design whenever multiple designs are approved, is appropriate for a particular seal location and who will be responsible for making this determination. If the operator does not have a seal design in the ventilation plan which is appropriate for the particular conditions at a seal location, then an appropriate design will need to be submitted for approval. General approvals for specific types of alternative seals are no longer applicable and must be removed from ventilation plans.

The Mine Waste and Geotechnical Engineering Division of Technical Support will review each alternative seal design to evaluate the structural integrity of all proposed seal installations. To facilitate this structural evaluation, mine operators should include the following information in their ventilation plan:

- A map showing the entire area to be sealed;
- A detailed map of the proposed seal locations (cribs, timbers, abandoned supplies, abandoned equipment or other potential projectiles within 1000 feet inby of the proposed seals must be located on the detailed map);
- Actual dimensions of each opening that will be sealed;
- Physical conditions of seal locations including water, roof support, methane liberation, etc.;
- Geology of roof, ribs and floor of seal locations, including strata thicknesses;
- Geotechnical characteristics and relevant test data for strata surrounding proposed seals;
- Provisions to be taken to reinforce the ribs and roof strata via grouting, bolting, installation of straps, etc.
- Detailed seal design including engineering analyses and factor-of-safety calculations, dimensions, materials, test data to substantiate strength parameters for in-situ and construction materials, data to support material durability to mine water and atmosphere, and detailed drawings;
- Detailed construction specifications including site preparation, installation sequence, installation equipment, form requirements, procedures for handling construction joints if the seal consists of a pumped material; supplemental roof support measures, etc.;
- Quality control procedures for seal installation to ensure an end product which complies with the design plans and specifications, including the

sampling and testing to be conducted to verify that required seal material properties, such as minimum required strengths, densities, etc., are met;
- PE certification of seal design and application.

The specific information necessary will depend on the type of alternative seal and the proposed application of those seals. These proposed seal designs and supporting materials should be forwarded to the Mine Waste & Geotechnical Engineering Division (MWGED). MWGED will provide the District Manager with a letter that details their review of the structural design and specifications of the proposed alternative seals. The District Manager is responsible for examining other factors such as ventilation of the seals, monitoring of sealed area atmosphere, corrosion-resistant water traps, ground control, rock dusting of sealed area, lightning conduction issues, etc., prior to approving these plans.

Background

Recent mine explosions indicate that there are problems with some alternative seals. Adequate seals are crucial to contain explosions and prevent potentially explosive or toxic gasses from migrating into active working areas of underground coal mines.

Authority

The Federal Mine Safety and Health Act of 1977, as amended, and 30 CFR 75.335, 75.370 and 75.371.

Filing Instructions

This PIL should be filed behind the tab marked "Procedure Instruction Letters" in the binder entitled Coal Mine Safety and Health General Inspection Procedures Handbook.

Issuing Office and Contact persons

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